

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of treatment, comprising:
identifying a human patient that is susceptible to ischemia; and
reducing the likelihood of an occurrence of a harmful effect of ischemia by
administering an effective sufficient amount of a stable free radical nitroxide to prevent a
harmful effect of ischemia in the human patient prior to the onset of ischemia;
wherein the likelihood is reduced in comparison to a human patient who was not
subjected to the administering step.
2. (Original) The method of Claim 1, wherein the nitroxide is 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl.
3. (Original) The method of Claim 1, wherein the human patient's susceptibility to ischemia arises from a medical procedure associated with a significant ischemic risk.
4. (Original) The method of Claim 3, wherein the medical procedure is the treatment of a hemorrhage.
5. (Original) The method of Claim 3, wherein the medical procedure is the treatment of an aneurysm.
6. (Currently Amended) The method of Claim [[5]] 3, wherein the medical procedure is surgery.
7. (Currently Amended) The method of Claim [[5]] 3, wherein the medical procedure is an endovascular procedure.
8. (Original) The method of Claim 1, wherein the mode of nitroxide administration is selected from the group consisting of oral and intravenous administration.
9. (Currently amended) A method of treatment comprising:
identifying a patient scheduled to undergo a medical procedure involving a significant risk of ischemia;
reducing the likelihood of an occurrence of a harmful effect of ischemia by
administering to the patient, prior to the medical procedure, an effective prophylactic
amount of a stable free radical nitroxide;
performing the medical procedure; and

administering to the patient, an additional prophylactic or therapeutic amount of a stable free radical nitroxide to ameliorate a harmful effect of ischemia.

10. (Original) The method of Claim 9, wherein the nitroxide is 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl.

11. (Original) The method of Claim 9, wherein the medical procedure is the treatment of a hemorrhage.

12. (Original) The method of Claim 9, wherein the medical procedure is the treatment of an aneurysm.

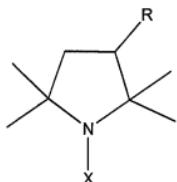
13. (Original) The method of Claim 9, wherein the medical procedure is surgery.

14. (Original) The method of Claim 9, wherein the medical procedure is an endovascular procedure.

15. (Original) The method of Claim 9, wherein the mode of nitroxide administration is selected from the group consisting of oral and intravenous administration.

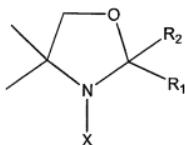
16-31 (Canceled)

32. (Currently Amended) The method of Claim 1 wherein the nitroxide is selected from the group consisting of



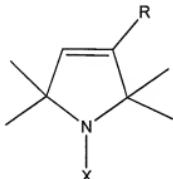
or a pharmaceutically acceptable salt thereof

wherein X is selected from O[•] and OH, and R is selected from COOH, CONH, CN, and CH₂NH₂,



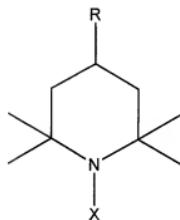
or a pharmaceutically acceptable salt thereof

wherein X is selected from O• and OH, and R₁ is selected from CH₃ and spirocyclohexyl, and R₂ is selected from C₂H₅ and spirocyclohexyl;



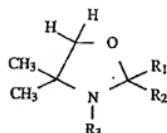
or a pharmaceutically acceptable salt thereof

wherein X is selected from O• and OH and R is CONH;



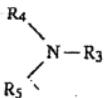
or a pharmaceutically acceptable salt thereof

wherein X is selected from O• and OH and R is H, OH, and NH₂;



wherein R₁ is -CH₃; R₂ is -C₂H₅, -C₃H₇, -C₃H₇, -C₄H₉, -C₅H₁₁, -C₆H₁₃, -CH₂-CH(CH₃)₂, -CHCH₃C₂H₅, or -(CH₂)₇-CH₃, or wherein R₁ and R₂ together form spirocyclopentane,

spirocyclohexane, spirocycloheptane, spirocyclooctane, 5-cholestane, or norbornane; R₃ is -O- or -OH, or a physiologically acceptable salt thereof which has antioxidant activity;



wherein R₃ is -O- or -OH; and

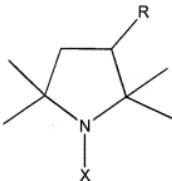
wherein R₄ and R₅ combine together with the nitrogen to form a heterocyclic group; wherein the atoms in the heterocyclic group (other than the N atom shown in the formula) may be all C atoms or may be C atoms and one or more N, O and/or S atoms; or

wherein R₄ and R₅ combine together to form substituted or unsubstituted pyrrole, imidazole, oxazole, thiazole, pyrazole, 3-pyrroline, pyrrolidine, pyridine, pyrimidine, or purine; or

wherein R₄ and R₅ themselves comprise a substituted or unsubstituted cyclic or heterocyclic group;

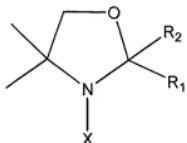
2-ethyl-2,5,5-trimethyl-3-oxazolidine-1-oxyl, 2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPOL), 4-amino-2,2,6,6-tetramethyl-1-piperidinyloxy (Tempamine), 3-Aminomethyl-PROXYL, 3-Cyano-PROXYL, 3-Carbamoyl-PROXYL, 3-Carboxy-PROXYL, 4-oxo-TEMPO, 4-amino-TEMPO, 4-(2-bromoacetamido)-TEMPO, 4-(ethoxyfluorophosphonyloxy)-TEMPO, 4-hydroxy-TEMPO, 4-(2-iodoacetamido)-TEMPO, 4-isothiocyanato-TEMPO, 4-maleimido-TEMPO, 4-(4-nitrobenzoyloxy)-TEMPO, and 4-phosphonoxy-TEMPO.

33. (Previously Presented) The method of Claim 9 wherein the nitroxide is selected from the group consisting of



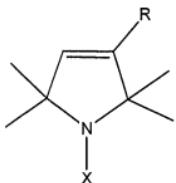
or a pharmaceutically acceptable salt thereof

wherein X is selected from O[•] and OH, and R is selected from COOH, CONH, CN, and CH₂NH₂,



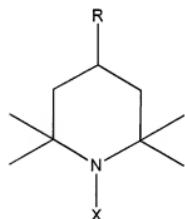
or a pharmaceutically acceptable salt thereof

wherein X is selected from O[•] and OH, and R₁ is selected from CH₃ and spirocylohexyl, and R₂ is selected from C₂H₅ and spirocyclohexyl;



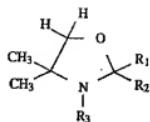
or a pharmaceutically acceptable salt thereof

wherein X is selected from O[•] and OH and R is CONH;



or a pharmaceutically acceptable salt thereof

wherein X is selected from O[•] and OH and R is selected from H, OH, and NH₂;



wherein R₁ is -CH₃; R₂ is -C₂H₅, -C₃H₇, -C₄H₉, -C₅H₁₁, -C₆H₁₃, -CH₂-CH(CH₃)₂, -CHCH₃C₂H₅, or -(CH₂)₇-CH₃, or wherein R₁ and R₂ together form spirocyclopentane, spirocyclohexane, spirocycloheptane, spirocyclooctane, 5-cholestane, or norbornane; R₃ is -O- or -OH, or a physiologically acceptable salt thereof which has antioxidant activity;



wherein R₃ is -O- or -OH; and

wherein R₄ and R₅ combine together with the nitrogen to form a heterocyclic group; wherein the atoms in the heterocyclic group (other than the N atom shown in the formula) may be all C atoms or may be C atoms and one or more N, O and/or S atoms; or

wherein R₄ and R₅ combine together to form substituted or unsubstituted pyrrole, imidazole, oxazole, thiazole, pyrazole, 3-pyrroline, pyrrolidine, pyridine, pyrimidine, or purine; or

wherein R₄ and R₅ themselves comprise a substituted or unsubstituted cyclic or heterocyclic group;

2-ethyl-2,5,5-trimethyl-3-oxazolidine-1-oxy, 2,2,6,6-tetramethylpiperidine-1-oxy (TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxy (TEMPOL), 4-amino-2,2,6,6-tetramethyl-1-piperidinyloxy (Tempamine), 3-Aminomethyl-PROXYL, 3-Cyano-PROXYL, 3-Carbamoyl-PROXYL, 3-Carboxy-PROXYL, 4-oxo-TEMPO, 4-amino-TEMPO, 4-(2-bromoacetamido)-TEMPO, 4-(ethoxyfluorophosphonyloxy)-TEMPO, 4-hydroxy-TEMPO, 4-(2-iodoacetamido)-TEMPO, 4-isothiocyanato-TEMPO, 4-maleimido-TEMPO, 4-(4-nitrobenzoyloxy)-TEMPO, and 4-phosphonooxy-TEMPO.

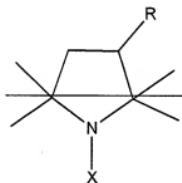
34. (Currently amended) A method of treatment comprising:

identifying a human patient that who is susceptible to ischemia associated with a medical procedure; and

reducing a harmful effect of ischemia in the human patient after the medical procedure by administering an effective amount of 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl prior to the onset of ischemia and prior to the medical procedure

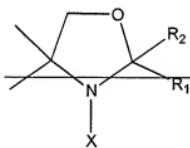
administering a sufficient amount of a nitroxide to reduce a harmful effect of ischemia in the human patient prior to the onset of ischemia,

wherein the nitroxide is selected from the group consisting of



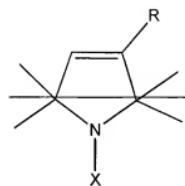
or a pharmaceutically acceptable salt thereof

wherein X is selected from O• and OH, and R is selected from COOH, CONH, CN, and CH₂NH₂,



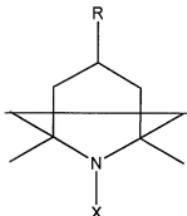
or a pharmaceutically acceptable salt thereof

wherein X is selected from O• and OH, and R₁ is selected from CH₃ and spirocyclohexyl, and R₂ is selected from C₂H₅ and spirocyclohexyl;



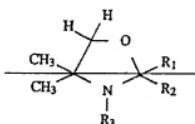
or a pharmaceutically acceptable salt thereof

wherein X is selected from O⁻ and OH and R is CONH;

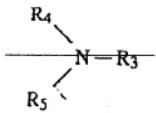


or a pharmaceutically acceptable salt thereof

wherein X is selected from O⁻ and OH and R is selected from H, OH, and NH₂;



wherein R₁ is CH₃; R₂ is C₂H₅, C₃H₇, C₄H₉, C₅H₁₁, C₆H₁₃, CH₂CH(CH₃)₂, CHCH₃C₂H₅, or (CH₂)₂CH₃; or wherein R₁ and R₂ together form spirocyclopentane, spirocyclohexane, spirocycloheptane, spirocyclooctane, 5-cholestane, or norbornane; R₃ is O or OH, or a physiologically acceptable salt thereof which has antioxidant activity;



wherein R₃ is —O— or —OH; and

wherein R₄ and R₅ combine together with the nitrogen to form a heterocyclic group; wherein the atoms in the heterocyclic group (other than the N atom shown in the formula) may be all C atoms or may be C atoms and one or more N, O and/or S atoms; or

wherein R₄ and R₅ combine together to form substituted or unsubstituted pyrrole, imidazole, oxazole, thiazole, pyrazole, 3-pyrroline, pyrrolidine, pyridine, pyrimidine, or purine; or

wherein R₄ and R₅ themselves comprise a substituted or unsubstituted cyclic or heterocyclic group;

2-ethyl-2,5,5-trimethyl-3-oxazolidine-1-oxyl, 2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO), 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl (TEMPO), 4-amino-2,2,6,6-tetramethyl-1-piperidinyloxy (Tempamine), 3-AminomethylPROXYL, 3-CyanoPROXYL, 3-CarbameylPROXYL, 3-CarboxyPROXYL, 4-oxo TEMPO, 4-amino TEMPO, 4-(2-bromoacetamide) TEMPO, 4-(ethoxyfluorophosphonyloxy) TEMPO, 4-hydroxy-TEMPO, 4-(2-iodoacetamide) TEMPO, 4-isothiocyanato-TEMPO, 4-maleimide TEMPO, 4-(4-nitrobenzoyloxy) TEMPO, and 4-phosphonoxy-TEMPO.

35. (Canceled) The method of Claim 34, wherein the nitroxide is 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl.

36. (Previously Presented) The method of Claim 34, wherein the human patient's susceptibility to ischemia arises from a medical procedure associated with a significant ischemic risk.

37. (Currently Amended) The method of Claim [[36]]34, wherein the medical procedure is the treatment of a hemorrhage.

38. (Currently Amended) The method of Claim [[36]]34, wherein the medical procedure is the treatment of an aneurysm.

39. (Currently Amended) The method of Claim [[36]]34, wherein the medical procedure is surgery.

40. (Currently Amended) The method of Claim [[36]]34, wherein the medical procedure is an endovascular procedure.

41. (Previously Presented) The method of Claim 34, wherein the mode of nitroxide administration is selected from the group consisting of oral and intravenous administration.

42. (Currently Amended) A method of treatment comprising:

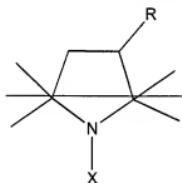
identifying a patient scheduled to undergo a medical procedure involving a significant risk of ischemia;

reducing a harmful effect of ischemia in the human patient after the medical procedure by administering an effective amount of 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl administering to the patient, prior to the medical procedure, a sufficient amount of a nitroxide to reduce a harmful effect of ischemia in the human patient;

performing the medical procedure; and

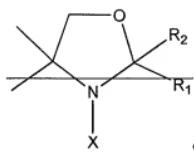
administering to the patient after the performing step, an additional amount of a nitroxide 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl effective to reduce a harmful effect of ischemia;

wherein the nitroxide is selected from the group consisting of



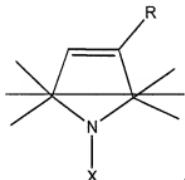
or a pharmaceutically acceptable salt thereof

wherein X is selected from O[•] and OH, and R is selected from COOH, CONH, CN, and CH₂NH₂.



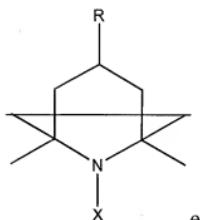
or a pharmaceutically acceptable salt thereof

wherein X is selected from O and OH, and R₁ is selected from CH₃ and spirocyclohexyl, and R₂ is selected from C₂H₅ and spirocyclohexyl;



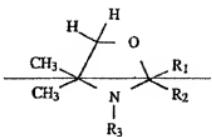
or a pharmaceutically acceptable salt thereof

wherein X is selected from O and OH and R is CONH;

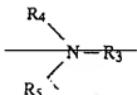


or a pharmaceutically acceptable salt thereof

wherein X is selected from O and OH and R is selected from H, OH, and NH₂;



wherein R₁ is —CH₃; R₂ is —C₂H₅, —C₃H₇, —C₄H₉, —C₅H₁₁, —C₆H₁₃, —CH₂—CH(CH₃)₂, —CHCH₂C₂H₅, or —(CH₂)₂—CH₃, or wherein R₁ and R₂ together form spirocyclopentane, spirocyclohexane, spirocycloheptane, spirocyclooctane, 5-cholestane, or norbornane; R₃ is —O— or —OH, or a physiologically acceptable salt thereof which has antioxidant activity;



wherein R₃ is —O— or —OH; and

wherein R₄ and R₅ combine together with the nitrogen to form a heterocyclic group; wherein the atoms in the heterocyclic group (other than the N atom shown in the formula) may be all C atoms or may be C atoms and one or more N, O and/or S atoms; or

wherein R₄ and R₅ combine together to form substituted or unsubstituted pyrrole, imidazole, oxazole, thiazole, pyrazole, 3-pyrroline, pyrrolidine, pyridine, pyrimidine, or purine; or

wherein R₄ and R₅ themselves comprise a substituted or unsubstituted cyclic or heterocyclic group;

2-ethyl 2,5,5 trimethyl 3-oxazolidine 1-oxyl, 2,2,6,6-tetramethylpiperidine 1-oxyl (TEMPO), 4-hydroxy 2,2,6,6-tetramethylpiperidine 1-oxyl (TEMPO), 4-amino 2,2,6,6-tetramethyl-1-piperidinyloxy (Tempamine), 3-Aminomethyl PROXYL, 3-Cyano PROXYL, 3-Carbamoyl PROXYL, 3-Carboxy PROXYL, 4-oxo TEMPO, 4-amino TEMPO, 4-(2-bromoacetamido) TEMPO, 4-(ethoxyfluorophosphonyloxy) TEMPO, 4-hydroxy TEMPO, 4-(2-iodoacetamide) TEMPO, 4-isothiocyanato TEMPO, 4-maleimido TEMPO, 4-(4-nitrobenzoyloxy) TEMPO, and 4-phenoxy TEMPO.

43. (Canceled) The method of Claim 42, wherein the nitroxide is 4-hydroxy-2,2,6,6-tetramethylpiperidine-1-oxyl.

44. (Previously Presented) The method of Claim 42, wherein the medical procedure is the treatment of a hemorrhage.

45. (Previously Presented) The method of Claim 42, wherein the medical procedure is the treatment of an aneurysm.

46. (Previously Presented) The method of Claim 42, wherein the medical procedure is surgery.

47. (Previously Presented) The method of Claim 42, wherein the medical procedure is an endovascular procedure.